Alternatives to Transmission System Expansion – Local Area Perspective
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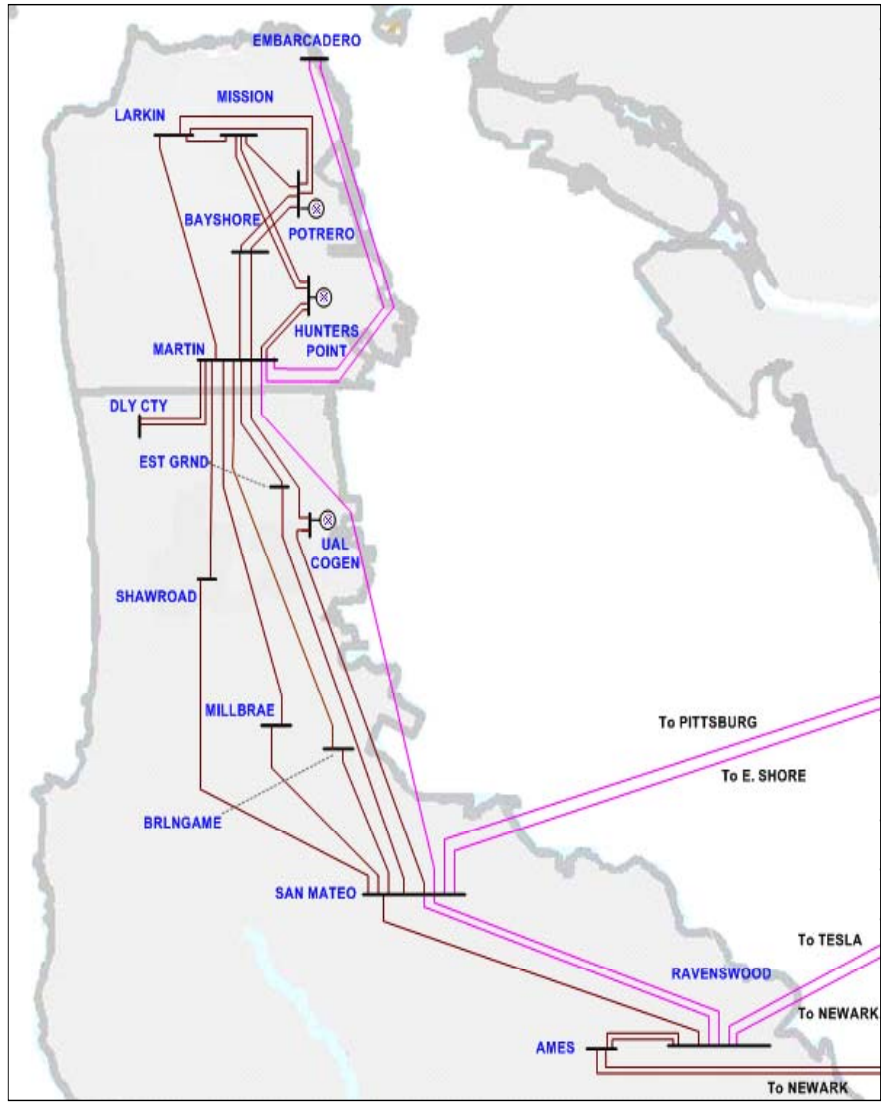
- San Francisco Planning Context
- Analytical Approach for Comparing DG and DSM to Transmission Expansion
- Need for Regional Planning in Transmission Constrained Areas

San Francisco Planning Context

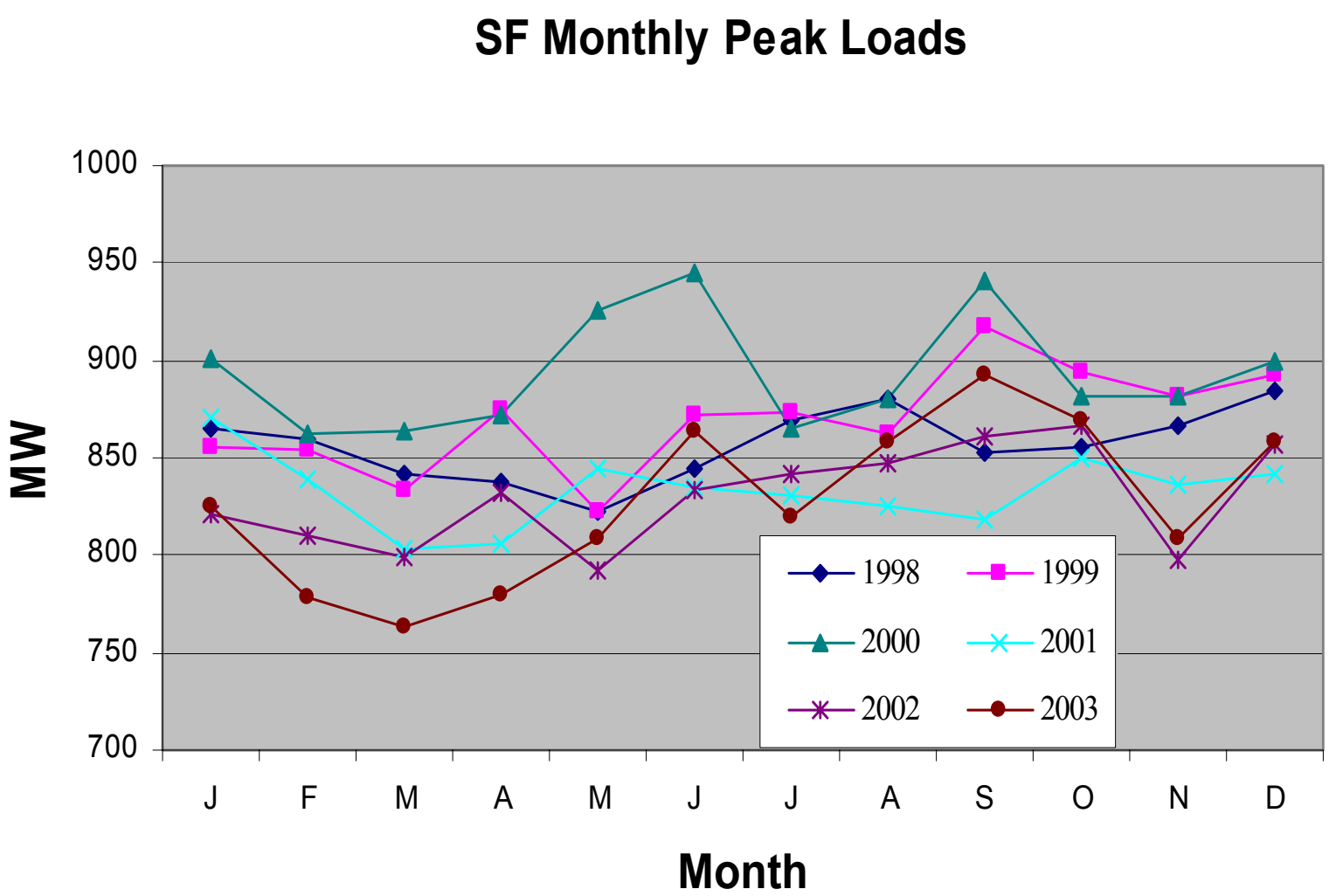
- December 1998 SF Blackout
- ISO-Led Stakeholder Process Prioritizes Jefferson-Martin Transmission Line (2000)
- Mirant Submits AFC for 540 MW CC Plant
- SF BOS Passes Ordinance to Develop SF Energy Resource Plan (2001)
- Significant Load Growth in Peninsula Forecasted by PG&E

Vulnerabilities of SF electric system

- Limited transmission capacity along single Peninsula corridor
- In-City generation is old, highly polluting
- SF and PG&E agreed to close Hunters Point power plant as soon as reliability allows…



SF Peak is Different from System Peak



SF Energy Planning Started with Alternative Resource Scenarios

- Central Generation
- More Imports
- Distributed Resources

Scenario analysis is a planning tool for exploring strategies that blend factual analysis with assumption about the future.

SF used three scenarios to stimulate and facilitate broad public debate on critical issue.

Scenario Analysis 2002-2012

- Central Generation
  - 540 MW Combined Cycle Power Plant (Potrero 7)
  - Minimal energy efficiency, solar, DG
- More Imports
  - 230 kV line (Jefferson-Martin)
  - Moderate energy efficiency, solar and DG
- Distributed Resources
  - Neither Potrero 7 or Jefferson-Martin built
  - Sufficient peakers and cogeneration site to shutdown Hunters Point Power Plant
  - Aggressive energy efficiency, solar and DG

Results and Use of Scenarios

- **All scenarios improve reliability and reduce pollution**
- **Societal costs very similar in each case**
- **Different risks for each scenario**
  - **Central Generation**
    - **Delay or cancellation because of market conditions**
    - **Potential for exercise of market power**
  - **More Imports**
    - **Opposition could delay siting of new transmission**
    - **Possibility of catastrophic failure at Martin substation remains**
  - **Distributed Resources**
    - **Ability of CCSF to site peakers or cogeneration**
    - **High financial hurdles for third-party distributed generation and obstacles to interconnection**
    - **Political support wanes for large scale investments in energy efficiency and solar through Public Goods Charge and other policy mechanisms**

Recommendations

- CCSF should take on a greater role in planning for and procuring new sources of power generation and demand reduction for San Francisco.
- CCSF should identify opportunities for power plant development to provide an alternative to assure the closure of Hunters Point if Potrero 7 is not built.
- CCSF should support the permitting of the Jefferson-Martin transmission line and work with ISO and PG&E to identify other needed transmission enhancements.
- CCSF should aggressively implement energy efficiency and solar on municipal facilities.

Status of Plan Implementation

- AFC for three combustion turbines submitted to CEC
- CPUC ALJ recommends approval of Jefferson-Martin
- PG&E and CCSF implementing peak reduction energy efficiency program
- CCSF budgeting $7 million for solar and municipal energy efficiency measures
- Limited private sector DG because of financial uncertainties and difficulties in interconnection
- ISO agrees to Hunters Point shutdown with siting of combustion turbines and specified PG&E transmission projects (not including Jefferson-Martin)
- PG&E argues for closure of Hunters Point with Jefferson-Martin and other transmission projects (even if new combustion turbines are not built)

Distributed Resources as Alternative to Transmission

- Need detailed understanding of timing and cost of transmission alternative
- Need detailed information on local loads and growth rate
- Need mechanism to identify and prioritize DG plant siting and cost recovery mechanism for grid enhancement by non-utility developers
- Need to target DSM programs by area and time

Use Marginal Costs to Determine Value of Targeted DG and DSM

- Marginal cost of local transmission and distribution together with marginal energy cost forms the full marginal cost against which energy efficiency and distributed generation should be evaluated
- DSM and DG must be available at times of area peak load to defer T&D capacity expansion

Need for Regional Approach to Transmission Planning and Alternatives

- Distribution utilities should be required to engage in least-cost transmission and distribution system planning
- Regional planning collaboratives could be established to determine avoided costs for T&D, identify DSM and DG alternatives, recommend cost recovery for non-utility DG and develop implementation plans.
- Bay Area would be suitable for testing regional collaborative for transmission planning given number of RMR units, need for retiring old plants and experience of San Francisco.